WHAT IS CLAIMED IS:

1. A display device, comprising:

switching elements for driving pixels that are formed at the respective intersections of signal lines and scan lines; and

photoelectric conversion elements that are provided at least one by one while corresponding to the switching elements respectively and which convert light received within a specified range into an electric signal,

wherein the photoelectric conversion element has an I layer between a p layer and an n layer, and a defect density of this I layer is higher than a defect density of a channel portion of the switching element.

2. The display device of Claim 1, wherein

the I layer includes a p^- layer and an n^- layer which are formed between a p^+ layer and an n^+ layer and

a defect density of the p^- layer is higher than a defect density of the channel portion of the switching element.

3. The display device of Claim 1, further comprising:

a first gate electrode disposed on the I layer of the photoelectric conversion element; and

a second gate electrode disposed on the channel portion of the switching element,

wherein the first gate electrode has a gate length longer than that of the second gate electrode.

4. The display device of Claim 3, wherein the number of the

second gate electrodes in the switching elements is larger than the number of the first gate electrodes in the photoelectric conversion elements.

5. A method for manufacturing a display device which includes switching elements for driving pixels that are formed at the respective intersections of signal lines and scan lines, and photoelectric conversion elements that are provided at least one by one while corresponding to the switching elements respectively and which convert light received within a specified range into an electric signal, the method comprising the steps of:

forming a polysilicon layer on an insulating substrate;

forming a first insulating layer on the polysilicon layer;

injecting impurity ions into regions where the switching elements and the photoelectric conversion elements are formed in the polysilicon layer respectively;

forming a first metal layer on the first insulating layer;

forming a first gate electrode for the photoelectric conversion element and a second gate electrode for the switching element by patterning the first metal layer;

injecting impurity ions into regions where the switching elements and the photoelectric conversion elements are formed in the polysilicon layer respectively;

hydrogenating the polysilicon layer so as to set a defect density in the region for forming the photoelectric conversion

element to be higher than a defect density in the region for forming the switching element; and

exposing regions where the respective electrodes of the switching element and the photoelectric conversion element are formed in the polysilicon layer, and forming a second metal layer in the exposed regions.

6. The manufacturing method of Claim 5, wherein a gate length of a first gate electrode of the photoelectric conversion element is made longer than a gate length of a second gate electrode of the switching element.

7. The manufacturing method of Claim 5, wherein the time required for hydrogenating the region for forming the photoelectric conversion element is made shorter than the time required for hydrogenating the region for forming the switching element.

8. The manufacturing method of Claim 5, wherein the number of the second gate electrodes in the switching elements is made larger than the number of the first gate electrodes in the photoelectric conversion elements.

9. An optical sensor diode, comprising:

a semiconductor layer including a p region to which p-type impurities are injected, an n region to which n-type impurities are injected and an i region with a lower impurity concentration than those of the p and n regions;

an anode electrode connected to the p region;

a cathode electrode connected to the n region; and

a gate electrode provided above the i region with an insulating film interposed therebetween.

10. The optical sensor diode of Claim 9, wherein the semiconductor layer is formed of polysilicon.

11. The optical sensor diode of Claim 9, wherein the p-type impurities are boron and the n-type impurities are phosphorous.

12. The optical sensor diode of Claim 9, further comprising:

another n region, to which n-type impurities are injected at a lower concentration than that of the said n region, between the i region and the said n region.

13. The optical sensor diode of Claim 9, wherein the gate electrode is connected to the cathode electrode.

14. The optical sensor diode of Claim 9, wherein the gate electrode is connected to the anode electrode.

15. The optical sensor diode of Claim 9, further comprising:

a first electrostatic capacity element formed between the gate electrode and the anode electrode; and

a second electrostatic capacity element formed between the gate electrode and the cathode electrode.

16. The optical sensor diode of Claim 15, wherein

the first electrostatic capacity element is formed of a polysilicon film in the same layer as the semiconductor layer and an upper electrode common to the gate electrode, which is provided so as to overlap the polysilicon film and

the second electrostatic capacity element is formed of a polysilicon film in the same layer as the semiconductor layer

and an upper electrode common to the gate electrode, which is provided so as to overlap the polysilicon film.

17. The optical sensor diode of Claim 15, wherein

the first electrostatic capacity element is formed of a lower electrode common to the gate electrode and a draw-out electrode common to the anode electrode, which is provided so as to overlap the lower electrode and

the second electrostatic capacity element is formed of a lower electrode common to the gate electrode and a draw-out electrode common to the cathode electrode, which is provided so as to overlap the lower electrode.

18. The optical sensor diode of Claim 15, wherein

the first electrostatic capacity element is formed of the p region and a gate electrode formed so as to overlap the p region, and

the second electrostatic capacity element is formed of the n region and a gate electrode formed so as to overlap the n region.

19. The optical sensor diode of Claim 15, wherein

the first electrostatic capacity element is formed of the gate electrode and an anode electrode formed so as to overlap the gate electrode, and

the second electrostatic capacity element is formed of the gate electrode and a cathode electrode formed so as to overlap the gate electrode.

20. An image acquisition circuit, comprising:

a plurality of signal lines installed on a glass insulating substrate;

a plurality of selective lines installed so as to intersect with the signal lines;

a common control line installed corresponding to each of the selective lines;

selection switches provided for the respective signal lines; and

gate-controlled type optical sensor diodes provided at the respective intersections of the signal lines and the selective lines, in which from an anode electrode and a cathode electrode, one is selected to be connected to the signal line, and the other one is connected to the selective line, and a gate electrode is connected to the common control line.

21. A method for driving an image acquisition circuit which has a plurality of signal lines installed on a glass insulating substrate, a plurality of selective lines installed so as to intersect with the signal lines, a common control line installed corresponding to each of the selective lines, selection switches provided for the respective signal lines and gate-controlled type optical sensor diodes provided at the respective intersections of the signal lines and the selective lines, in which from an anode electrode and a cathode electrode, one is selected to be connected to the signal line, and the other one is connected to the selective line, and a gate electrode is connected to the common control line, the method comprising

the steps of:

applying a fixed voltage to the common control line;

turning on a selection switch of a signal line to which an optical sensor diode for detecting the amount of light is connected; and

applying a voltage larger than the fixed voltage to a selective line to which the optical sensor diode for detecting the amount of light is connected.